Amendments to the Specification

The paragraph starting at page 2, line 21 has been amended as follows.

With the structure shown in Fig. 15, the pressurized connector 520 is fixed to the carriage base plate 530. The carriage base plate 530 is tightly fixed to the outer wall face of the carriage 510, that is, the wall face on the side opposite to the side of the carriage 510 that faces the recording head 500, by use of a screw 550. In accordance with the example shown in Fig. 15, the carriage base plate 530 is tightly fixed by the utilization of the screw fixing portion 510C ~~from~~ on the wall face on the side opposite to the side that faces the recording head 500. In this respect, the pressurized pin 520A of the pressurized connector 520 is soldered to the face on the opposite side of the carriage base plate 530 to be electrically connected with the base plate on the apparatus main body side through the carriage base plate and the FFC 540. In this way, the carriage base plate 530 of the conventional carriage structure is fixed to the carriage 510 by means of the screw 550 from the opposite side of the recording head 500 with respect to the wall face as shown in Fig. 15.

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The paragraph starting at page 3, line 20 has been amended as follows.

For example, the ~~pin numbers~~ number of the pressurized ~~pin~~ pins 520A of the pressurized connector 520 ~~are~~ is approximately 40, and assuming that the maximum load per pin is 100 g, a load of maximum 4 kg should be exerted on the pressure connector

A2

520 as a whole. Then, the screw 550 should receive the entire load of maximum 4 kg eventually. In this case, since the carriage 510 is formed ~~by~~ of plastic, a self-tap screw should be used as the screw 550 to fix ~~them by use of the screw 550~~ the connector and carriage, or there is a need for the formation of a metal tap on the carriage 510 side. In any case, in order to secure the strength of the screw fixing portion 510C of the carriage 510, it is necessary to make the gap L1 between the upper and lower screw fixing portions 510 large to a certain extent. This becomes an unfavorable factor when making the carriage 510 smaller.

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The paragraph starting at page 7, line 6 has been amended as follows.

Fig. 12 is a sectional side view that schematically shows the state where the recording head is inserted from the state represented in Fig. 11 with the guiding portion of the carriage cover as a guide.

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The paragraph starting at page 8, line 9 has been amended as follows.

In Fig. 1, a reference numeral 100 designates a recording head serving as recording means, and for the present embodiment, the recording head 100 is of a separate tank type ~~having~~ with the ink jet recording head and ink tank ~~are~~ being separate bodies; 20, the carriage that mounts the recording head 100 and reciprocates in the main scanning directions; 30, the carriage cover that guides the recording head 100 to the setting position

A4

on the carriage 20, while hiding (for the prevention of exposure) the carriage 20 and the base plate of the recording head 100 (the carriage base plate 40 and the head base plate 110); 35, the set lever that ~~operate~~ effects the detachment and attachment of the recording head 100; 50, a guide shaft for guiding and supporting the movement of the carriage 20; 60, a carriage motor serving as the driving source of the carriage 20; and 70, the timing belt that serves as transmission means for transmitting the driving power of the carriage motor 60 to the carriage 20.

The paragraph starting at page 10, line 7 has been amended as follows.

Fig. 2 is a perspective view that schematically shows the recording head 100 represented in Fig. 1, observed from the outer side (back side, front side) thereof. Fig. 3 is a perspective view that schematically shows the inner side of the recording head 100 represented in Fig. 2, observed from the inner side (rear side) thereof. In Fig. 2 and Fig. 3, a reference numeral 180 designates a color ink tank. In this ink tank 180, ink of three colors, Y (yellow), M (magenta), and C (cyan), is retained in the same housing by use of partitions, respectively. A reference numeral 190 designates ~~a~~ an ink tank for black ink. The color ink tank 180 and the black ink tank 190 are exchangeable individually, and when ink is no longer present, each individual color ink tank 180 and black ink tank 190 or both of them can be freely replaced without removing the recording head 100 from the recording apparatus main body.

The paragraph starting at page 10, line 25 has been amended as follows.

On both sides of the recording head 100, ~~each boss~~ bosses 101 ~~is~~ are

A6 installed to engage with the cam surface 35C (Fig. 8) of the head set lever 35, which will be described later, in order to set the recording head in the carriage 20. The ~~boss~~ bosses 101 ~~each installed on both sides is~~ are configured symmetrically on the left and right sides.

The paragraph starting at page 13, line 16 has been amended as follows.

Fig. 4 is a partial perspective view that schematically shows the structure of the ink discharge portion (one discharge port array) provided for the recording head 100 serving as recording means. In Fig. 4, for the discharge port surface 81, which faces a recording material, such as a recording sheet, with a designated gap (approximately 0.3 mm to 2.0 mm, for example), there are formed plural discharge ports 82 at designated

A7 pitches. Then, ~~the~~ an electrothermal converting element (heat generating resistive element or the like) 85 to generate energy for ~~use of~~ ink discharge is arranged along the wall face of each liquid path 84 communicated with a common liquid chamber 83 and each discharge port 82. The recording head 100 is positioned and fixed to the carriage 20 in such a positional relationship that the discharge ports 82 are arranged in line in the direction intersecting with the main scanning movement direction (that is, the traveling direction of the carriage 20 in a case of being mounted on the carriage 20 as in the present embodiment, the direction indicated by an arrow X). Thus, the recording head 100 is

structured to drive the corresponding electrothermal converting element 85 (by the application of pulse voltage) in accordance with image signals or discharge signals to ~~give~~ cause film boiling ~~to~~ in ink in the liquid path 84, and discharge ink ~~form~~ from the corresponding discharge port 82 by means of pressure thus exerted at that time.

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The paragraph starting at page 15, line 5 has been amended as follows.

For the pressurized connector 41, the pressurized pin 42 formed ~~by~~ of metal is provided in a state of penetrating the connector. Each pressurized pin 42 is soldered to the carriage base plate 40 on the side opposite to the head fixing face (the surface pressed to be in contact with the contact face 111 of the head base plate 110 of the recording head 100). The pressurized contact face 42A of each pressurized ~~pint~~ pin 42 is in contact under pressure with the contact face 111 of the head base plate 110, hence materializing the condition in which the electrical coupling is possible between the recording apparatus main body and the recording head.

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The paragraph starting at page 16, line 18 has been amended as follows.

Fig. 7 is a perspective view that schematically shows the details of the carriage 20. In Fig. 7, on the upper face of the carriage 20, the flat spring 21 is installed to fix the recording head by hooking it to the rib 112 on the upper part of the recording head 100. In other words, the structure is arranged such that with the operation of the set lever

A9

35, the flat spring 21 is elastically deformed in the retracting direction to draw the recording head 100 into the carriage 20, and after that, the flat spring 21 is released to fix the carriage 20 to the recording head 100 by hooking it to the ~~rid~~ rib 112 of the recording head 100.

The paragraph starting at page 17, line 4 has been amended as follows.

The boss 20C on the upper end face of the carriage 20 is the one that axially supports the gap adjustment lever 90 rotatively. The gap adjustment lever 90 is axially supported on the ~~bass~~ boss 20C to be able to rotate. As shown in Fig. 7, the gap adjustment lever 90 can rotate in the direction indicated by an arrow V, and if the gap adjustment lever 90 rotates to the position at V1, the surface 90A of the gap adjustment lever 90 is made slidable with the guide rail portion 81 of the chassis 80. On the contrary, if it rotates ~~in~~ to the ~~direction~~ position V2, the surface 90B of the gap adjustment lever is made slidable on the face of the guide rail portion 81. The surface 90A and surface 90B are at different ~~in the distance~~ distances from the center of the ~~buss~~ boss 20C. Therefore, with the rotation of the gap adjustment lever 90, the carriage 20 rotates centering on the guide shaft 50. As a result, the gap between the discharge port surface 81 of the recording head 100 mounted on the carriage 20 and the surface of a recording sheet (distance between the surface of recording sheet and the discharge port surface) is made changeable.

The paragraph starting at page 18, line 26 has been amended as follows.

The bosses 20B formed on the two locations, left and right, of the carriage 20 are those fitted into the positioning holes 41C of the pressurized connector 41 to position the pressurized connector 41 in the direction X (left and right directions) and direction Z (upward and downward directions) with respect to the carriage 20. The faces 20A formed on the two locations, left and right, of the carriage 20 are those against which the top face 41D of the boss 41B formed for the head connector and the end face 41E of the positioning hole 41C are arranged to abut. The top face 41D, the end face 41E, and face 20A are pressed to each other by the reaction force exerted by the pressurized contact with the contact pins 42 of the recording head 100, and constitute the abutting faces to position the head connector 41 to the carriage 20 in the direction Y (forward and backward directions).

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The paragraph starting at page 21, line 13 has been amended as follows.

Fig. 11 to Fig. 14 are side views that schematically illustrate the operations of each part one after another when the recording head 100 is set to the carriage 20. Fig. 11 shows the state where the set lever 35 is retracted upward immediately before the recording head 100 is inserted into the carriage ~~in the carriage~~ 20. Fig. 12 shows the state where the recording head 100 is inserted with the guiding portion of the carriage cover 30 as a guide. Fig. 13 shows the state where the set lever 35 rotates downward to draw the recording head 100 into the set position in the carriage 20. Fig. 14 shows the state where the recording head 100 is positioned and installed on the set position of the carriage 20.

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The paragraph starting at page 22, line 20 has been amended as follows.

Then, as shown in Fig. 13, when the set lever 35 is being depressed, the second cams 35C on the left and right of the set lever draw in the bosses 101 on the left and right upper portions of the recording head 100 to move the recording head 100 in the carriage 20 direction. At the same time, then, the leading ends of the flat springs 21 fixed to the left and right of the carriage 20, begin to return gradually downward by the elasticity thereof by means of the first cams 35B provided for the left and right of the set lever 35. Subsequently, after the rib 112 on the upper end of the recording head 100 passes the leading end of the flat spring 21, the flat spring 21 depresses the rib 112 of the recording head at this time as shown in Fig. 14 to depress the recording head downward. At this juncture, the flat spring 21 retracts from the first cam 35B of the set lever 35.

The paragraph starting at page 23, line 13 has been amended as follows.

In the state of installation as shown in Fig. 14, the recording head 100 receives the external force F0 from the flat spring 21, while receiving the contact reaction force F1 from the pressurized connector 41 as represented therein. The acting directions of these forces F0 and F1 are substantially as those shown in Fig. 14. Then, on each positioning face (each abutting face) of the recording head 100 and carriage 20, the recording head is depressed and positioned in conditions given below in the direction X

(left and right directions), direction Y (forward and backward directions), and direction Z (upward and downward directions).

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The paragraph starting at page 24, line 25 has been amended as follows.

In other words, for the carriage 20 provided with the carriage base plate 40 having the pressurized connector 41 attached thereto, the pressurized connector 41 is installed on the wall face of the carriage 20 on the fixing face side of the recording head 100 (the fixation of the pressurized connector 41 to the carriage 20 being made on the recording head fixing face of the carriage), hence making it possible to hold the contact pressure of the pressurized connector 41 with the robustness of the carriage entire body. As a result, the thickness of the carriage 20 can be made thinnest, among some advantages, which leads to making the carriage smaller. Also, the method for ~~holing~~ holding the pressurized connector 41 on the carriage 20 does not ~~required~~ require any tightening means, such as screws, by the utilization of the contact pressure of the pressurized connector 41, leading to the reduction of manufacturing costs.

A15